School-Based Mental Health in Underserved Communities

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The Appalachian Region

- Educational attainment and income statistics fall below state averages
- Poverty rates exceed state averages
- Mental Health Professional Shortage Area
  - Services are not available or accessible
- Fears of being judged and concerns of trust are salient barriers
  - Services are not acceptable

ARC, 2004a, 2004b; Murphy & Owens, 2006; Owens et al, 2007

Evidence-based Psychosocial Treatments for ADHD

- Behavioral Parenting Programs (Pelham et al., 1998; Pelham & Fabiano, in press)
- Behavioral Classroom Management (Pelham & Waschbusch, 1999; DuPaul & Stoner, 1994; Kelley, 1990)
  - Daily Report Card
  - Collaborative Teacher Consultation (Sheridan et al., 1990)

Do these findings generalize to community practice?

Child with multiple diagnoses?
Complex cases?
Families in poverty?
Rural communities?

Statement of the Problem

- Meta-analysis of 162 treatment outcome studies, less than 20% examined:
  - "typically referred" cases
  - children multiple diagnoses
  - children receiving care in community settings
- Review of 98 studies on treatment for ADHD, less than 40% reported on SES
  - 82% reported an SES of Level 3 on Hollingshead (skilled laborers)

Weisz & Hawley, 2005; Girio et al., 2007
Statement of the Problem

We know very little about the effectiveness of evidence-based practices when implemented with referred samples in rural, low-income communities.

National Initiatives

- Equitable dissemination of best practices to underserved populations
- Expand School Mental Health Programming

New Freedom Commission, 2003; IOM, 2006

Research Questions

- How effective are evidence-based practices when implemented with children in low-income families referred to a school mental health program in rural communities?
  - Expected that treatment-related gains would be less substantial than those observed in efficacy trials
- Lessons learned: How can EBTs be integrated into the educational setting

Overcoming Barriers via Expanded School Mental Health

Participants

- Data from 2002-2006
  - 91 children in the Treatment Group
  - 26 children in the Waitlist Group
- 75% Male
- 87% Caucasian
- 40% identified for special education services
- 20% had repeated a grade
- Average IQ = 95
- Only 30% were receiving services at the time of intake (despite moderate to severe problems)
- 70% have ADHD
  - 60% have multiple diagnoses

Selected Participant Data by Group

<table>
<thead>
<tr>
<th>Variable</th>
<th>Treatment</th>
<th>Waitlist</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>N (%)</td>
<td>N (%)</td>
</tr>
<tr>
<td>Grade</td>
<td></td>
<td></td>
</tr>
<tr>
<td>K through 3rd grade</td>
<td>69%</td>
<td>88%</td>
</tr>
<tr>
<td>4th, 5th, or 6th grade</td>
<td>31%</td>
<td>12%</td>
</tr>
<tr>
<td>On Medication at Referral</td>
<td>36%</td>
<td>31%</td>
</tr>
<tr>
<td>In Counseling at Referral</td>
<td>31%</td>
<td>27%</td>
</tr>
<tr>
<td>Medication part of treatment</td>
<td>44%</td>
<td>42%</td>
</tr>
<tr>
<td>Met criteria for ADHD</td>
<td>71%</td>
<td>39%</td>
</tr>
</tbody>
</table>

Socioeconomic Status (SES)

Y.E.S.S. Program

MTA Study
Socioeconomic Strata in Y.E.S.S.

Parent’s Education

<table>
<thead>
<tr>
<th>Strata</th>
<th>Y.E.S.S Mothers</th>
<th>Y.E.S.S Fathers</th>
<th>MTA Study</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>20%</td>
<td>77%</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>35%</td>
<td>35%</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>45%</td>
<td>23%</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>5</td>
<td>30%</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>23%</td>
<td>30%</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>30%</td>
<td>30%</td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>30%</td>
<td>30%</td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>30%</td>
<td>30%</td>
<td></td>
</tr>
</tbody>
</table>

Procedures

- Youth referred by teachers and principals
  - No advertising or active recruitment to the study
  - 75% of referred families consented
- Treated children:
  - Received Y.E.S.S. Program services
  - Participated in assessments in fall, winter and spring
- Waitlist children:
  - No Y.E.S.S. Program services in their school
  - Participated in assessments in fall, winter and spring
  - Received services the next year

Y.E.S.S. Program Services

- In-house clinician 15-20 hours/week
- Comprehensive assessment
- Bi-weekly collaborative consultation with teachers (Sheridan et al., 1990)
  - Weekly ‘curbside’ consultation
  - Individual behavioral parenting sessions (Barkley, 1998)

Outcome Indicators

- Parent and Teacher Ratings of Child Symptoms
  - Disruptive Behavior Disorder Rating Scale (Pelham et al. 1992)
  - Inattention, hyper/impulsivity, defiance, aggression
  - Scores range from 0-3
- Parent and Teacher Ratings of Impairment
  - Impairment Rating Scale (Fabiano et al. 2006)
  - Academic, classroom functioning, family functioning, relationships w/peers, teachers, parents
  - Scores range from 0-6; 3 or higher, clinically significant
- Grade Point Average by Quarter
- Daily Report Card data
- Teacher and Parent participation & compliance
- Satisfaction surveys

Analytic Procedures

- Hierarchical Linear Modeling (HLM)
- DVs: child symptoms, impairment, GPA
- Time: Fall (-2), Winter (-1), Spring (0)
- Level-1:
  \[ y_{ij} = \pi_0j + \pi_1j (Time_{ij}) + e_{ij} \]
- Level-2:
  \[ \pi_0j = \gamma_{00} + \gamma_{01} (Treatment\ Group_j) + r_{0j} \]
  \[ \pi_1j = \gamma_{10} + \gamma_{11} (Treatment\ Group_j) + r_{1j} \]
- Within-group effect size analysis
Results – Teacher Report

Group differences for Inattention, Hyper/Imp, and Aggression are significant, p < .05

Within Subjects Effect Sizes for Teacher-Rated Symptoms

HLM Coefficients for Teacher-Rated Symptoms

<table>
<thead>
<tr>
<th>Variable</th>
<th>Treatment</th>
<th>Waitlist</th>
<th>Group</th>
</tr>
</thead>
<tbody>
<tr>
<td>HLM Ratings</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Inattention</td>
<td>-.07</td>
<td>.18</td>
<td>* p &lt; .01</td>
</tr>
<tr>
<td>Hyper/Imp</td>
<td>-.13</td>
<td>.07</td>
<td>* p &lt; .05</td>
</tr>
<tr>
<td>Opp/Defiant</td>
<td>.02</td>
<td>.13</td>
<td>* p &lt; .05</td>
</tr>
<tr>
<td>Conduct</td>
<td>-.07</td>
<td>.09</td>
<td>* p &lt; .05</td>
</tr>
</tbody>
</table>

HLM Coefficients for Teacher-Rated Impairment

<table>
<thead>
<tr>
<th>Variable</th>
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<th>Group</th>
</tr>
</thead>
<tbody>
<tr>
<td>HLM Ratings</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>IRS Peer</td>
<td>-.35</td>
<td>.05</td>
<td>ns.</td>
</tr>
<tr>
<td>IRS Teacher</td>
<td>-.25</td>
<td>.34</td>
<td>* p &lt; .01</td>
</tr>
<tr>
<td>IRS Academic</td>
<td>-.21</td>
<td>.37</td>
<td>* p &lt; .05</td>
</tr>
<tr>
<td>IRS Classroom</td>
<td>-.23</td>
<td>.12</td>
<td>ns.</td>
</tr>
<tr>
<td>IRS Self/Estim</td>
<td>-.19</td>
<td>-.35</td>
<td>ns.</td>
</tr>
<tr>
<td>IRS Overall</td>
<td>-.32</td>
<td>.46</td>
<td>* p &lt; .01</td>
</tr>
<tr>
<td>GPA</td>
<td>.04</td>
<td>-.24</td>
<td>* p &lt; .05</td>
</tr>
</tbody>
</table>

Effect Sizes for Teacher-Rated Impairment in Functioning

Effect Sizes for Grade Point Average

Group differences for teacher, academic, & overall are significant, p < .05
Results – Parent Report

Effect Sizes for Parent-Rated Symptoms

HLM Coefficients for Parent-Rated Symptoms

<table>
<thead>
<tr>
<th>Variable</th>
<th>Treatment</th>
<th>Waitlist</th>
<th>Group</th>
</tr>
</thead>
<tbody>
<tr>
<td>DRD Ratings</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Inattention</td>
<td>-.08*</td>
<td>.01</td>
<td>ns</td>
</tr>
<tr>
<td>Hyper/Imp</td>
<td>-.12**</td>
<td>-.10*</td>
<td>ns</td>
</tr>
<tr>
<td>Opp/Defiant</td>
<td>-.14**</td>
<td>.00</td>
<td>ns</td>
</tr>
<tr>
<td>Conduct</td>
<td>-.06**</td>
<td>-.01</td>
<td>ns</td>
</tr>
</tbody>
</table>

Effect Sizes for Parent-Rated Impairment

HLM Coefficients for Parent-Rated Impairment

<table>
<thead>
<tr>
<th>Variable</th>
<th>Treatment</th>
<th>Waitlist</th>
<th>Group</th>
</tr>
</thead>
<tbody>
<tr>
<td>IRS Parent</td>
<td>-.32**</td>
<td>-.04</td>
<td>ns</td>
</tr>
<tr>
<td>IRS Academics</td>
<td>-.12</td>
<td>.06</td>
<td>ns</td>
</tr>
<tr>
<td>IRS Family</td>
<td>-.42**</td>
<td>.03</td>
<td>p &lt; .00</td>
</tr>
<tr>
<td>IRS Self-Esteem</td>
<td>-.12</td>
<td>-.06</td>
<td>ns</td>
</tr>
<tr>
<td>IRS Overall</td>
<td>-.37**</td>
<td>-.11</td>
<td>ns</td>
</tr>
</tbody>
</table>

Effect Sizes for Parent-Rated Impairment in Functioning

Parent-Rated Impairment in Family Functioning
Parent-Rated Opposition

Symptom Severity

Treatment

Waitlist

Fall Winter Spring

Sample Daily Report Card

Individual Goals

Positive, Proactive

Daily Report Card

Home School Links

1st Grade Student

Number of Incidents of Physical Aggression Per Day

Date

Percent of Work Completed Per Day

Date

Same 1st Grade Student

Treatment Utilization and Potency
Daily Report Card Summary Data

- 67% of treated children had a successful DRC
- On average, teachers complied with DRC procedures on 77% of school days
  - Range 10% - 100%

Frequency and Potency of Direct Contact

<table>
<thead>
<tr>
<th>Type of Contact</th>
<th>M (SD)</th>
<th>Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of Parent Sessions</td>
<td>18.18</td>
<td>3.00 - 63.00</td>
</tr>
<tr>
<td>Number of Parent Sessions</td>
<td>9.73</td>
<td>0 - 20.00</td>
</tr>
<tr>
<td>Number of Teacher Consultations</td>
<td>25.66</td>
<td>4.00 - 74.00</td>
</tr>
</tbody>
</table>

60% of families attended 5 or more sessions; 30% attended 11 or more

Teacher Satisfaction Survey

<table>
<thead>
<tr>
<th>Survey Item</th>
<th>Strongly Agree</th>
<th>Agree</th>
<th>Strongly Disagree</th>
<th>Disagree</th>
</tr>
</thead>
<tbody>
<tr>
<td>Instrutions were useful</td>
<td>8.7%</td>
<td>6.7%</td>
<td>4.4%</td>
<td>10.5%</td>
</tr>
<tr>
<td>Consultations from clinicians were helpful</td>
<td>4.4%</td>
<td>0.7%</td>
<td>4.4%</td>
<td>41.2%</td>
</tr>
<tr>
<td>Clinicians are part of school culture</td>
<td>6.7%</td>
<td>0.7%</td>
<td>5.1%</td>
<td>46.5%</td>
</tr>
<tr>
<td>Interventions allowed more time to teach</td>
<td>7.5%</td>
<td>4.5%</td>
<td>20.9%</td>
<td>34.5%</td>
</tr>
<tr>
<td>Parent improved child’s behavior</td>
<td>5.1%</td>
<td>3.4%</td>
<td>18.2%</td>
<td>40.6%</td>
</tr>
<tr>
<td>Parent improved child’s academics</td>
<td>8.8%</td>
<td>4.4%</td>
<td>31.1%</td>
<td>42.6%</td>
</tr>
<tr>
<td>Communication with parents increased</td>
<td>5.3%</td>
<td>7.6%</td>
<td>34.1%</td>
<td>41.7%</td>
</tr>
<tr>
<td>Benefits outweigh time costs</td>
<td>8.3%</td>
<td>2.3%</td>
<td>16.6%</td>
<td>53.0%</td>
</tr>
<tr>
<td>Clinicians as a whole beneficial</td>
<td>6.0%</td>
<td>1.5%</td>
<td>28.3%</td>
<td>56.9%</td>
</tr>
</tbody>
</table>

Parent Satisfaction Surveys

<table>
<thead>
<tr>
<th>Survey Item</th>
<th>Strongly Agree</th>
<th>Agree</th>
<th>Strongly Disagree</th>
<th>Disagree</th>
</tr>
</thead>
<tbody>
<tr>
<td>Communication with the teacher</td>
<td>4.9%</td>
<td>1.0%</td>
<td>11.4%</td>
<td>31.9%</td>
</tr>
<tr>
<td>Clinician was responsive to my concerns</td>
<td>1.0%</td>
<td>1.0%</td>
<td>41.0%</td>
<td>29.4%</td>
</tr>
<tr>
<td>Lacked trust in program staff</td>
<td>5.9%</td>
<td>1.0%</td>
<td>2.4%</td>
<td>65.7%</td>
</tr>
<tr>
<td>Interventions improved classroom behaviors</td>
<td>8.7%</td>
<td>0.9%</td>
<td>4.9%</td>
<td>46.0%</td>
</tr>
<tr>
<td>Interventions improved academics</td>
<td>8.7%</td>
<td>3.9%</td>
<td>31.0%</td>
<td>47.0%</td>
</tr>
<tr>
<td>Interventions improved home behaviors</td>
<td>6.9%</td>
<td>3.9%</td>
<td>19.6%</td>
<td>48.0%</td>
</tr>
<tr>
<td>Felt included in decision about services</td>
<td>6.1%</td>
<td>0.9%</td>
<td>4.1%</td>
<td>61.2%</td>
</tr>
<tr>
<td>Felt autonomous in ways of coping</td>
<td>6.2%</td>
<td>1.0%</td>
<td>7.2%</td>
<td>41.2%</td>
</tr>
</tbody>
</table>

Parent Preferences

- A subset of parents reported that they preferred school-based services to clinic-based services
  - 46% because of more frequent appointments
  - 47% because of more flexible appointment times
  - 38% because of fewer transportation difficulties
  - 22% because school meeting are less embarrassing
Summary & Implications

Documented Benefits of SMH Programming
- SMH reaches families who otherwise may not receive in services
  - Nearly 70% were not connected to services at intake
- Early identification
  - 69% of treated children were 3rd grade or below
- SMH may reduce stigma and increase parent engagement
- Interventions can be embedded in the child’s daily routine; enhances ecological validity

Summary of Primary Treatment Outcome Indicators
- EBTs can retain their effectiveness when transported to rural, underserved communities
- Significant reductions in symptoms and significant improvement in relationships with adults, in setting-specific functioning, and in overall functioning.

Understanding Context
- Transporting EBTs…More challenging than we thought?
  - Effect sizes are small to moderate, and smaller than that found in tightly-controlled trials. WHY?
  - Our sample was of significantly lower SES than typical treatment outcome studies
    - Greater case complexity
    - Greater family stress
    - Less treatment engagement/participation
  - More research: Need to understand modifications necessary to enhance cultural sensitivity and parent engagement

Implications
- SMH works. We need to build an infrastructure to sustain it
- Examine factors associated with partnership development & infrastructure development
- Children with co-occurring problems need intensive mental health services AND intensive academic services

Implications
- Documenting outcomes in school service delivery models may be different than in clinic-based models
  - Teacher referrals
    - Parents may be less invested in treatment
    - Parents may not report (or underreport) problems
    - Treatment-related improvement associated with greater parent stress
  - Early identification
    - Difficult to document change when symptoms are mild to moderate

21st Annual RTC Conference
Presented in Tampa, February 2008
Implications

- Teachers are co-providers of behavioral interventions and must receive training (at both pre-service and in-service) to better understand the disorders and the EBTs for the disorders.

Acknowledgements

- HRSA Quentin Burdick Program (D36HP03160)
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- Holl Foundation
- Ohio Mental Health Network for School Success

Thank You!

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